MEMORANDUM

June 13, 2006

To: Dave Speirs

From: Shudeish Mahadev

Subject: PM2.5 Hot Spot Analysis for SR-60/Moreno Beach Drive Interchange

The United States EPA promulgated NAAQS for $PM_{2.5}$ (along with revised NAAQS for ozone) on July 18, 1997 to complement the existing NAAQS for PM_{10}. These standards were challenged by a number of business and industry groups, but were upheld by the U.S Supreme Court and the District of Columbia Court of Appeals. EPA then published their final rule on $PM_{2.5}$ designations and classifications in the Federal Register on January 5, 2005, and established boundaries for areas designated as nonattainment, unclassifiable or attainment/classifiable. The SCAB was designated as a nonattainment area for $PM_{2.5}$, which became effective on April 5, 2005.

While recognizing that highway projects that involve significant amount of traffic and diesel vehicles contribute to particulate matter (both $PM_{2.5}$ and PM_{10}) degradation, and to ensure conformity of these projects with efforts to attain the NAAQS, EPA published a final rule on March 10, 2006 (officially effective as of April 3, 2006), that established conformity criteria and procedures for transportation projects to determine their impacts on ambient $PM_{2.5}$ and PM_{10} levels in nonattainment and maintenance areas. The "Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" provides guidance on qualitative analyses for these two criteria pollutants. The $PM_{2.5}$ hot-spot analysis must meet the requirements of this rule, while the PM_{10} analysis can meet the requirements of this rule or the previous FHWA's Sept 12, 2001 "Guidance for Qualitative Project-Level 'Hot-Spot' Analysis in PM_{10} Nonattainment and Maintenance Areas". Both of these requirements are in compliance with the transportation conformity rule (40 CFR 51.390 and Part 93), which establishes the criteria and procedures for determining whether transportation activities conform to the state air quality implementation plan (SIP).

The rule requires a Project of Air Quality Concern (POAQC), defined in 93.123(b)(i) to 93.123(b)(v) to conduct a $PM_{2.5}$ and PM_{10} hot-spot analysis. POAQC under the definition of 93.123(b)(i) are; "new or expanded highway projects that have a significant number of or significant increase in diesel vehicles". According to the preamble to the rule, an example of a POAQC that would be covered by 93.123(b)(i) is a "project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic".

The projected ADT for the project for year 2035 under the no build alternative is 215,000 on SR-60, and 205,000 under the build condition. The reduced mainline volume is due to the redistribution of some local traffic between Nason Street and Moreno Beach Drive to Eucalyptus Avenue, a parallel local arterial that can be connected to Moreno Beach Drive under the "build" condition. (See Attachments following page 7 of this memo for figures 11 and 18 from the March 13, 2006 Traffic study. These

figures illustrate the connection of Eucalyptus Avenue to Moreno Beach Drive under the Build Conditon). See Table 2 for additional "build" and "no-build" traffic projections. Based upon existing traffic data, the current percentage of diesel truck traffic for the SR-60 mainline is 13.2% (Caltrans count) and 4% (City count) on the arterial system. In accordance with the City of Moreno Valley General Plan, the proposed land-use in the vicinity of the project is primarily residential with some commercial. Based upon this land-use the percentage of diesel truck traffic is anticipated to remain unchanged and therefore, this project is believed to qualify as "Not a POAQC" and a PM2.5 and PM10 hot-spot analysis would not be required.

Table 1 shows that the project area is in a non-attainment area for $PM_{2.5}$ (also see CARB, 2005a). The CARB (2005a) report, as shown in Figure 1, also presents data for the annual average composition of $PM_{2.5}$ that was measured at Rubidoux (27.9 $\mu g/m^3$), approximately 8 miles west of the project area; ammonium nitrate (from combustion)- 46%, ammonium sulfate (from combustion)- 13%, elemental carbon (from combustion)- 4%, organic carbon (from combustion)- 31%, road and other dust- 4%, and other- 2%. As can be discerned from this data, combustion sources contribute predominantly to the measured $PM_{2.5}$ in the project area, with most of the contribution likely from automobiles, and a small contribution from road dust.

Although the project is already located in an area that is in nonattainment, and with combustion sources contributing predominantly to the nonattainment status, the discussion below will demonstrate that the project is not expected to cause further degradation of ambient $PM_{2.5}$ concentrations. Conversely, the project will most likely ameliorate air quality in the local project area by reducing congestion and improving traffic flow in the project area, and thus reducing the contribution to $PM_{2.5}$ degradation from automobiles. The following indicators demonstrate that traffic conditions on SR-60 will be improved between the build and no build alternatives for year 2035; decrease in total ADT (Table 2), improvement in LOS (Table 3), and decrease in queue length (Table 4). Additionally, the percentage of diesel trucks in the vehicle mix on the freeway and on the local streets is expected to remain the unchanged because the areas served by the intersections are primarily residential.

Moreover, EPA and CARB programs to target combustion sources and reduce particulate emissions will cause overall $PM_{2.5}$ concentrations to decline significantly. Some of the programs already in effect or under consideration are: diesel particulate risk management, regional haze, ground level ozone control, and smoke management (CARB, 2003). These programs will both reduce the background level of $PM_{2.5}$ all over the region and the state, as well as reduce $PM_{2.5}$ emissions from this project.

Table 1
Air Pollutant Data Summary from Perris, Rubidoux and Magnolia Monitoring Stations (2002-2005)[3]

Pollutant	CARB Monitoring Station Data		
	2003 (2002)	**2004 (2003)**	**2005 (2004)**
Ozone (O_3)			
Highest 1 hour, ppm	0.155	0.128	0.126
Days > 0.12 ppm[1]	7	2	1
Days > 0.09 ppm[2]	67	36	11
Highest 8 hour, ppm	0.121	0.104	0.103
Days > 0.08 ppm[1]	46	20	3
Carbon Monoxide (CO)			
Highest 1 hour, ppm	(8.0)	(5.0)	(4.0)
Days > 35.0 ppm[1]	0	0	0
Days > 20.0 ppm[2]	0	0	0
Highest 8 hour, ppm	3.67	2.97	2.13
Days > 9.0 ppm[1,2]	0	0	0
Nitrogen Dioxide (NO_2)			
Highest 1 hour, ppm	0.099	0.092	0.069
Days > 0.25 ppm[2]	0	0	0
Annual Average	(0.023)	(0.021)	(0.017)
Annual Standard Exceeded?	No	No	No
Sulfur Dioxide (SO_2)			
Highest 24 hour, ppm	0.012	0.015	0.011
Days > 0.14 ppm[1]	0	0	0
Days > 0.25 ppm[2]	0	0	0
Annual Average	0.002	0.003	0.004
Annual Standard Exceeded?	No	No	No
Particulates (PM_{10})			
Highest 24 hour	142.0	83.0	39.0
Days > 150 $\mu g/m^3$ [1]	0	0	0
Days > 50 $\mu g/m^3$ [2]	17	15	0
Annual Average	(45.1)	(43.9)	(41.4)
National Annual Standard Exceeded?	No	No	No
State Annual Standard Exceeded?	Yes	Yes	Yes
Particulates ($PM_{2.5}$)			
Highest 24 hour	104.3	93.8	63.1
National 24-Hr Standard Exceeded? ($> 65 \mu g/m^3$ [1])	Yes	Yes	Yes
Annual Average	(27.1)	(22.6)	(20.8)
National Annual Standard Exceeded? ($> 15 \mu g/m^3$ [1])	Yes	Yes	Yes
State Annual Standard Exceeded? ($> 12 \mu g/m^3$ [2])	Yes	Yes	Yes
Lead (Pb)	No Data	No Data	No Data

Ppm – parts per million
$\mu g/m^3$ – micrograms per cubic meter
NM – Not measured at this station
AAM – Annual Arithmetic Mean
AGM – Annual Geometric Mean
[1]Federal Standard
[2]State Standard
[3]Numbers in parenthesis represent monitoring data from years 2002 to 2004.

Table 2

ADT for the Project Study Area For Year 2035

ALL Vehicles						TRUCKS *		
Roadway Segment			Length	Year 2035		Truck %	Year 2035	
Roadway	from	To	Miles	No Build	Build	*	No Build	Build
SR-60	West project limit (PM 17.9)	Nason St (PM 18.4)	0.468	212,889	211,662	13.2%	28,100	27,900
	Nason St (PM 18.4)	Moreno Beach Dr (PM 19.1)	0.75	215,467	204,708	13.2%	28,400	27,000
	Moreno Beach Dr (PM 19.1)	east project limit (PM 19.8)	0.682	189,528	191,200	13.2%	25,000	25,200
Nason	Ironwood Ave	SR-60 Westbound Ramps	0.398	13,769	10,801	4.0%	600	400
	SR-60 Westbound Ramps	New SR-60 Eastbound Ramps	0.166	33,103	25,102	4.0%	1,300	1,000
	New SR-60 Eastbound Ramps	Old SR-60 Eastbound Ramps	0.105	49,110	35,834	4.0%	2,000	1,400
	SR-60 Eastbound Ramps	Fir Ave	0.107	49,110	35,834	4.0%	2,000	1,400
Moreno Beach	Ironwood Ave	SR-60 Westbound Ramps	0.359	16,886	21,271	4.0%	700	900
	SR-60 Westbound Ramps	SR-60 Eastbound Ramps	0.182	32,477	41,056	4.0%	1,300	1,600
	SR-60 Eastbound Ramps	Eucalyptus Ave	0.089	32,477	49,651	4.0%	1,300	2,000
	Eucalyptus Ave	Auto Mall Dr	0.337	36,655	36,461	4.0%	1,500	1,500
Eucalyptus	Nason St	Moreno Beach Dr	0.924	7,744	23,720	4.0%	300	900

(Source for Traffic Volumes: Urban Crossroads Traffic Forecasts Report dated 1-10-2006)

1. Mainline traffic volumes on SR-60 will decrease for "build" condition (versus the "no-build" condition) due to relocation of EB off/on ramp intersection at Eucalyptus Ave/Moreno Beach Dr. which would allow the connection of east-west parallel arterial road (Eucalyptus Avenue) See Attached Figures (with and without project)
   The projected traffic volumes on Nason Street for the "build" will decrease versus the "no build" condition due to the completion Eucalyptus Aveune, resulting in some redistribution of local traffic to Moreno Beach Drive. Conversly, the "build" condition will increase the traffic volumes on Moreno Beach Dr versus the "build" condition due the completion of Eucalyptus Ave.
2. The truck percentages for SR-60 are estimated at 13.2 percent based upon Caltrans 2004 counts at Post Mile 12.2," East Junction I-215", and at Post Mile 22.1 "Gilman Springs Road"
3. The truck percentages on SR60 are expected to remain the same for year 2035 as current conditions since the landuse per the City General Plan for project vicinity and easterly along SR60 is primarily residential.

Table 3
LOS For the Project Study Area For Year 2035

Location	No Build Peak Hour		Build Peak Hour	
	AM	PM	AM	PM
Nason St @ WB SR-60 Ramps	C	C	B	B
Nason St @ SR-60 EB Ramps	C	C	B	B
Nason St @ Eucalyptus Ave	D	D	C	C
Moreno Beach Dr @ Ironwood	D	D	C	C
Moreno Beach Dr @ SR-60 WB Ramps	C	C	B	B
Moreno Beach Dr @ EB Ramps	F	F	B	B
Moreno Beach Dr @ Eucalyptus			B	C
Moreno Beach Dr @ Auto Mall Dr	A	A	A	A

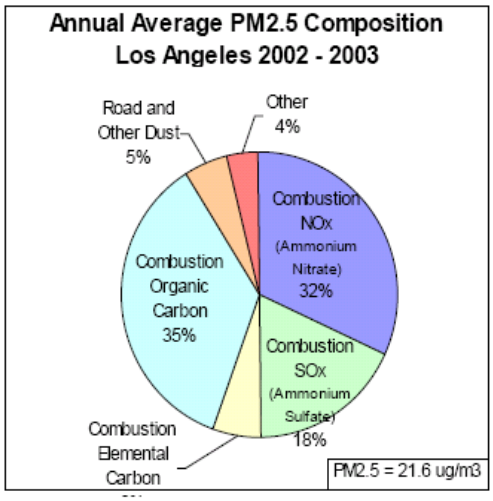
Table 4
Total Queue Lengths For the Project Study Area For Year 2035

Location	Eastbound		Westbound		Northbound		Southbound	
	No Build	Build	No Build	Build	No Build	Build	No Build	Build
Nason St / WB SR-60 Ramps	199	126	252	114	352	109	368	186
Nason St / SR-60 EB Ramps	556	232			726	421	1353	110
Nason St / Eucalyptus Ave	634	249	213	312	632	429	747	416
Moreno Beach Dr / Ironwood	352	304	583	344	330	132	524	287
Moreno Beach Dr/SR-60 WB Ramps			686	237	147	477	499	129
Moreno Beach Dr / EB Ramps	1558	426	341		944	173	593	273
Moreno Beach Dr / Eucalyptus		316		295		304		313
Moreno Beach Dr/Auto Mall Dr			86	36	104	172	12	169

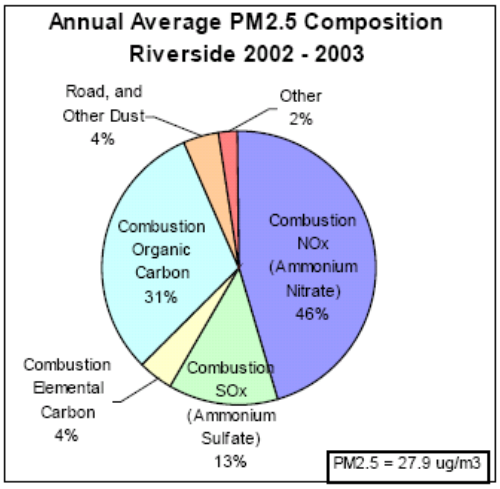
Figure 1
Annual Average Composition Measured at Rubidoux, Years 2002-2003

Figure O-4. Annual Average Composition of PM2.5 and Link to Emission Source type.

a) Los Angeles



b) Riverside



South Coast Air Basin II-O-6

ATTACHMENTS:

The following paged contain

Figures 11 and 18

From

Draft Traffic Study

Dated: March 13, 2006

By Parsons

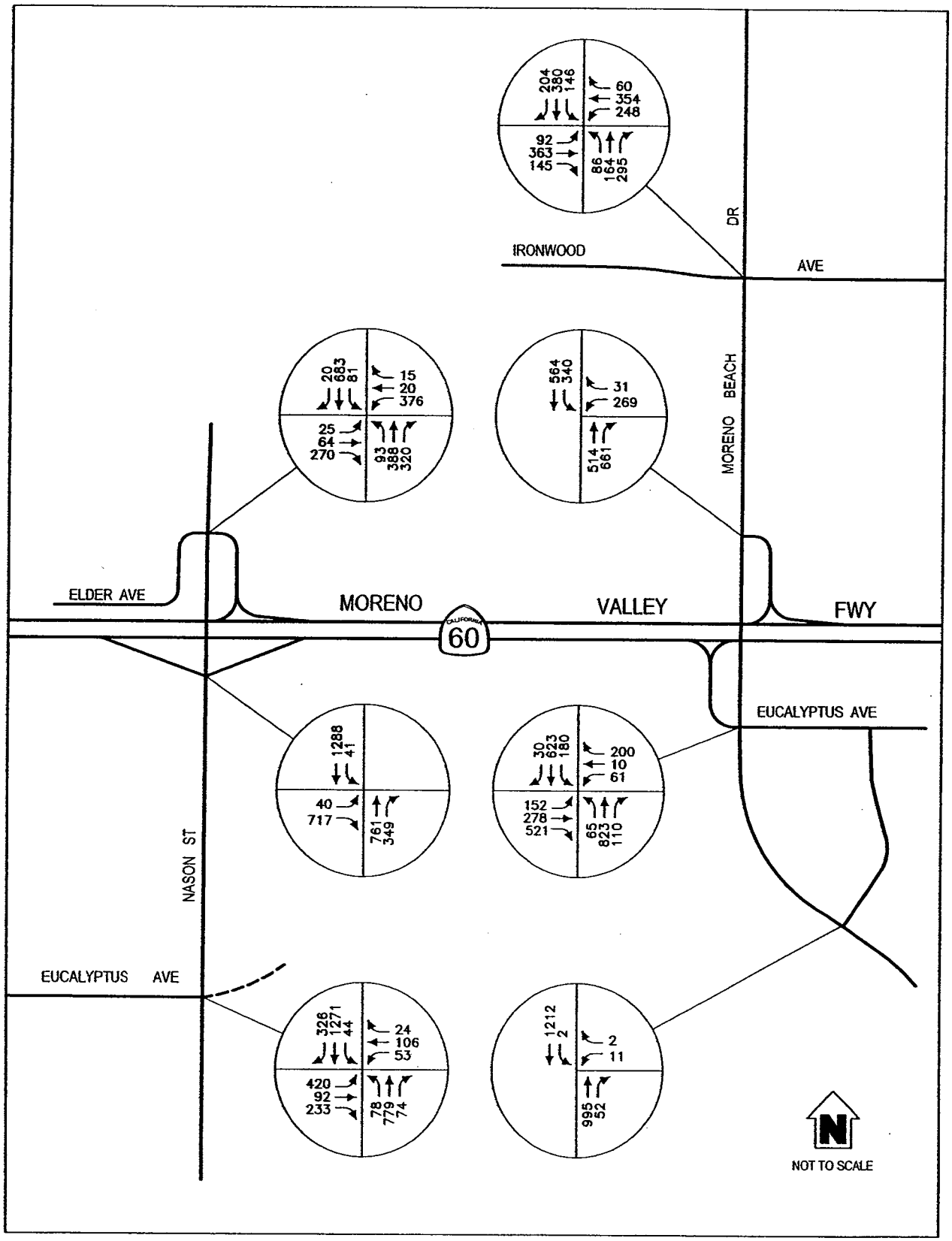


Figure 11. No Build Condition Year 2035 AM Peak Hour Intersection Turning Counts

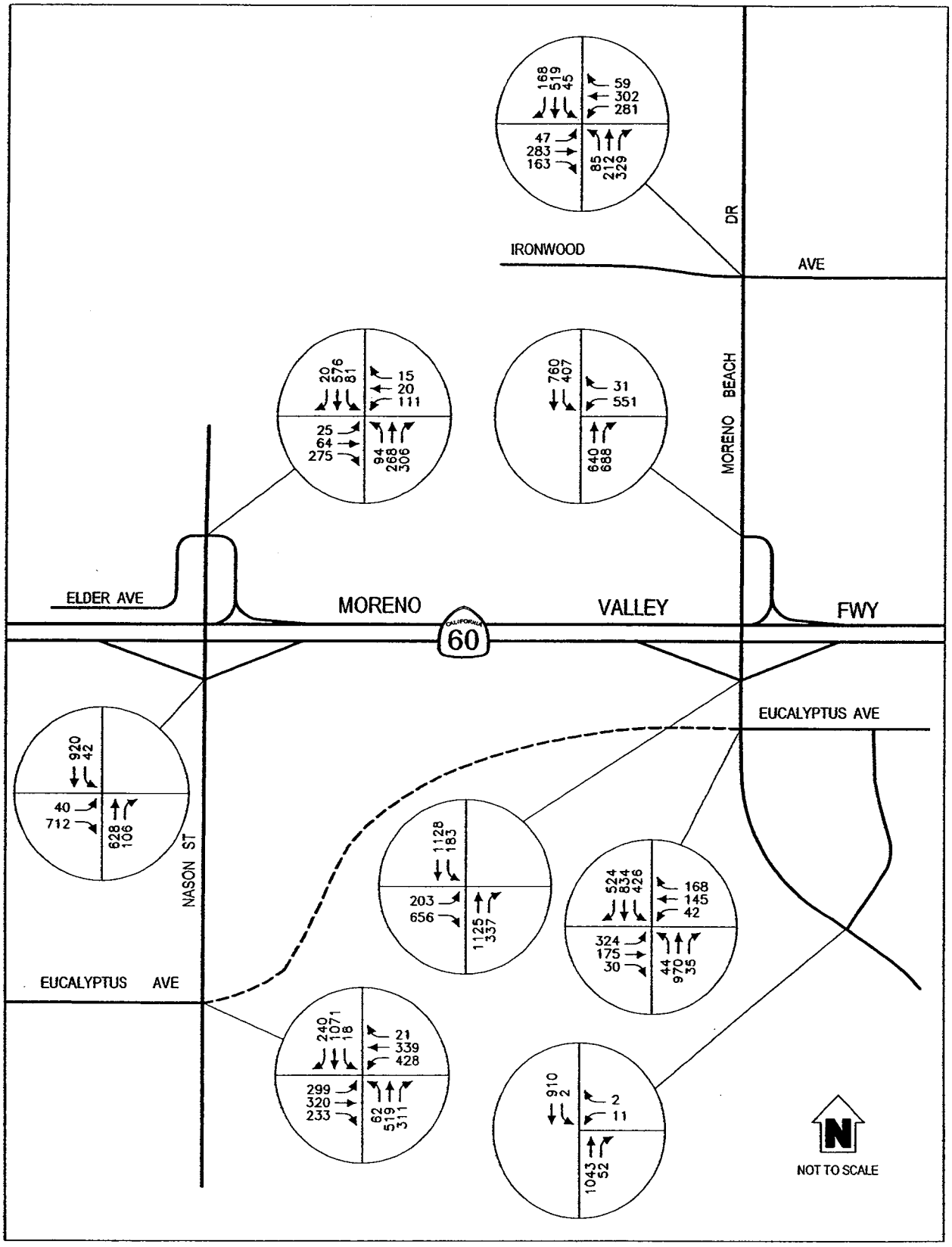


Figure 18. Build Condition Year 2035 AM Peak Hour Intersection Turning Counts